Appendix G: List of References

Proposed Amendments to the Low Carbon Fuel Standard Regulation

Release Date: December 19, 2023

The following documents are the technical, theoretical, or empirical studies, reports, or similar documents relied upon in proposing these regulatory amendments, identified as required by Government Code, section 11346.2, subdivision (b)(3). Additionally, each appendix References the documents upon which it relies, as required by Government Code, section 11346.2, subdivision (b)(3). Note: Each "Explanatory Footnote" is a footnote containing explanatory discussion rather than referencing specific documents relied upon.

Staff Report: Initial Statement of Reasons

- State of California Executive Department, Executive Order N-79-20. September 23, 2020. https://www.gov.ca.gov/wp-content/uploads/2020/09/9.23.20-EO-N-79-20-Climate.pdf
- 2. California Air Resources Board, 2022 Scoping Plan for Achieving Carbon Neutrality. December 2022. https://ww2.arb.ca.gov/sites/default/files/2022-12/2022-sp 1.pdf
- 3. State of California Executive Department, *Executive Order N-79-20*. September 23, 2020. https://www.gov.ca.gov/wp-content/uploads/2020/09/9.23.20-EO-N-79-20-Climate.pdf
- 4. California Air Resources Board, California Greenhouse Gas Emissions for 2000 to 2020, Trends of Emissions and Other Indicators. Pages 10-14. 2022. https://ww2.arb.ca.gov/sites/default/files/classic/cc/inventory/2000-2020_ghg_inventory_trends.pdf
- 5. Explanatory Note
- (a) California Air Resources Board, Proposed Regulation to Implement the Low Carbon Fuel Standard Volume I Staff Report: Initial Statement of Reasons. March 5, 2009. https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2009/lcfs09/lcfsisor1.pdf
 (b) California Air Resources Board, Proposed Regulation to Implement the Low Carbon Fuel Standard Volume II Appendices, March 5, 2009. https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2009/lcfs09/lcfsisor2.pdf
 (c) California Air Resources Board, Final Statement of Reasons for Rulemaking. December 2009. https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2009/lcfs09/lcfsfsor.pdf
- 7. (a) California Air Resources Board, Staff Report: Initial Statement of Reasons for Rulemaking: Proposed Amendments to the Low Carbon Fuel Standard. October 26, 2011. https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2011/lcfs2011/lcfsisor.pdf (b) California Air Resources Board, Final Statement of Reasons: Amendments to the Low Carbon Fuel Standard Regulation. October 2012.
 - https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2011/lcfs2011/lcfsfsor.pdf
- 8. (a) California Air Resources Board, Staff Report: Initial Statement of Reasons for Rulemaking. Proposed Re-Adoption of the Low Carbon Fuel Standard Regulation. December 31, 2014.
 - https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2015/lcfs2015/lcfs15isor.pdf (b) California Air Resources Board, Final Statement of Reasons for Rulemaking, Including Summary of Comments and Agency Response: Re-adoption of the Low Carbon Fuel Standard Regulation. 2015.
 - https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2015/lcfs2015/fsorlcfs.pdf
- 9. (a) California Air Resources Board, *Public Hearing to Consider Proposed Amendments to the Low Carbon Fuel Standard Regulation and to the Regulation on Commercialization of Alternative Diesel Fuels.* Staff Report: Initial Statement of

Reasons. March 6, 2018.

https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2018/lcfs18/isor.pdf?_ga=2.23309 3594.551189306.1692641515-1059366641.1629756188

- (b) California Air Resources Board, Addendum to the Final Statement of Reasons for Rulemaking: Amendments to the Low Carbon Fuel Standard Regulation and to the Regulation on Commercialization of Alternative Diesel Fuels. Final Statement of Reasons. January 3, 2019.
- https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2018/lcfs18/lcfsaddendum.pdf?_g a=2.112540034.749536220.1693580753-1565224836.1601474474
- 10. (a) California Air Resources Board, *Public Hearing to Consider Proposed Amendments to the Low Carbon Fuel Standard Regulation and to the Regulation on Commercialization of Alternative Diesel Fuels*. Staff Report: Initial Statement of Reasons. October 1, 2019.
 - https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2019/lcfs2019/isor.pdf (10b) California Air Resources Board, Amendments to the Low Carbon Fuel Standard Regulation, Final Statement of Reasons. April 2020.
 - https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2019/lcfs2019/fsor.pdf
- 11. Explanatory Note
- 12. California Air Resources Board, LCFS Data Dashboard. Figure 9: LCFS Credit Market Net Position Histogram. (Updated on July 31, 2023). https://ww2.arb.ca.gov/resources/documents/lcfs-data-dashboard
- 13. California Air Resources Board, *LCFS Quarterly Data Spreadsheet*. (Updated on July 31, 2023). https://ww2.arb.ca.gov/resources/documents/lcfs-data-dashboard
- 14. Ibid
- 15. California Air Resources Board, *LCFS ZEV Infrastructure Crediting webpage*. (Accessed on April 18, 2023). https://ww2.arb.ca.gov/resources/documents/lcfs-zev-infrastructure-crediting
- 16. California Air Resources Board, Current California GHG Emission Inventory Data (2022 Edition). https://ww2.arb.ca.gov/ghg-inventory-data
- 17.117th Congress, *Inflation Reduction Act of 2022*. Pub.L. No. 117-169. August 16, 2022. https://www.congress.gov/bill/117th-congress/house-bill/5376/text
- 18. The White House, Building a Clean Energy Economy: A Guidebook to the Inflation Reduction Act's Investments in Clean Energy and Climate Action. 74-76. January 2023. https://www.whitehouse.gov/wp-content/uploads/2022/12/Inflation-Reduction-Act-Guidebook.pdf
- 19. United States Department of Energy Office of Energy Efficiency & Renewable Energy, Hydrogen Shot: Overview. (Accessed on December 13, 2023). https://www.energy.gov/eere/fuelcells/hydrogen-shot
- 20. Congressional Research Service, *Carbon Storage Requirements in the 45Q Tax Credit*. IF11639. June 28, 2021. https://crsreports.congress.gov/product/pdf/IF/IF11639
- 21. Explanatory Note
- 22. United States Department of Energy, U.S. Department of Energy Announces \$131 Million for CCUS Technologies. April 24, 2020. https://www.energy.gov/articles/us-department-energy-announces-131-million-ccus-technologies
- 23. United States Department of Energy, Funding Opportunity Announcement 2515, Carbon Capture R&D for Natural Gas and Industrial Point Sources, and Front-End Engineering Design Studies for Carbon Capture Systems at Industrial Facilities and

- Natural Gas Plants. October 6, 2021. https://www.energy.gov/fecm/articles/funding-opportunity-announcement-2515-carbon-capture-rd-natural-gas-and-industrial
- 24. Explanatory Note
- 25. California Air Resource Board, Latest GHG Inventory shows California remains below 2020 emissions target. October 19, 2020. https://ww2.arb.ca.gov/news/latest-ghg-inventory-shows-california-remains-below-2020-emissions-target
- 26. California Air Resources Board, California Transportation Supply (CATS) Model v0.2 Technical Documentation for August 2023 Example Scenario. August 2023. https://ww2.arb.ca.gov/sites/default/files/2023-08/CATS%20Technical 1.pdf
- 27. Cal. Code Regs., tit. 17, § 95487(a)(2)(D).
- 28. Cal. Code Regs., tit. 17, § 95485(c).
- 29. Internal Revenue Service. Sustainable Aviation Fuel Credit webpage. (Updated on January 31, 2023). https://www.irs.gov/credits-deductions/businesses/sustainable-aviation-fuel-credit
- 30. California Office of the Governor, *Governor's Letter to Chair Randolph*. July 22, 2022. https://www.gov.ca.gov/wp-content/uploads/2022/07/07.22.2022-Governors-Letter-to-CARB.pdf?emrc=1054d6
- 31. United Airlines, *Our sustainable aviation fuel program*. (Accessed on October 10, 2023). https://www.united.com/en/us/fly/company/responsibility/sustainable-aviation-fuel.html
- 32. Southwest Airlines, *Environmentally Sustainable Goals*. (Accessed on October 10, 2023). https://www.southwest.com/citizenship/planet/
- 33. American Airlines, *Pathway to net zero*. (Accessed on October 10, 2023). https://news.aa.com/esg/climate-change/pathway-to-net-zero/
- 34. Alaska Airlines, Flying with Purpose: Alaska Sets New Climate Goals, Including Netzero carbon Emission by 2040. April 21, 2021. https://news.alaskaair.com/sustainability/alaska-airlines-net-zero-carbon-goals/
- 35. Delta Airlines, *Committed to Sustainability*. (Accessed November 22, 2023). https://www.delta.com/us/en/about-delta/sustainability
- 36. California Air Resources Board, *Proposed Fiscal Year 2023-24 Funding Plan for Clean Transportation Incentives*. 59-60. October 6, 2023. https://ww2.arb.ca.gov/sites/default/files/2023-10/Proposed%20Funding%20Plan%20Fiscal%20Year%202023-24.pdf
- 37. California Air Resources Board, *Innovative Clean Transit*. (Accessed on October 10, 2023). https://ww2.arb.ca.gov/our-work/programs/innovative-clean-transit
- 38. California Air Resources Board, *Advanced Clean Trucks webpage*. (Accessed on October 10, 2023). https://ww2.arb.ca.gov/our-work/programs/advanced-clean-trucks
- 39. California Air Resources Board, *Advanced Clean Fleet webpage*. (Accessed on October 10, 2023). https://ww2.arb.ca.gov/our-work/programs/advanced-clean-fleets
- 40. California Air Resources Board, *CARB* and truck and engine manufacturers announce unprecedented partnership to meet clean air goals. July 6, 2023. https://ww2.arb.ca.gov/news/carb-and-truck-and-engine-manufacturers-announce-unprecedented-partnership-meet-clean-airf
- 41. California Office of Environmental Health Hazard Assessment, *Impacts of Greenhouse Gas Emission Limits Within Disadvantaged Communities: Progress Toward Reducing Inequities*. February 2022. https://oehha.ca.gov/media/downloads/environmental-justice//impactsofghgpoliciesreport020322.pdf

- 42. California Office of Environmental Health Hazard and Assessment, *CalEnviroScreen* 4.0. (Updated October 2021). https://oehha.ca.gov/calenviroscreen/report/calenviroscreen-40
- 43. United Nations Environment Programme and Climate and Clean Air Coalition, *Global Methane Assessment: Benefits and Costs of Mitigating Methane Emissions*. Summary for Policymakers. 2021.
 - https://wedocs.unep.org/bitstream/handle/20.500.11822/35917/GMA ES.pdf
- 44. Explanatory Note
- 45. California Air Resources Board, *LCFS Quarterly Data Spreadsheet*. (Updated on July 31, 2023). https://ww2.arb.ca.gov/resources/documents/lcfs-data-dashboard
- 46. California Air Resources Board, *Advanced Clean Fleets Resolution 23-13*. April 27, 2023. https://www2.arb.ca.gov/sites/default/files/barcu/board/res/2023/res23-13.pdf
- 47. Explanatory Note
- 48. California Energy Commission, *Renewables Portfolio Standard Eligibility Guidebook, Nineth Edition.* Publication Number: CEC-300-2016-006-ED9-CMF-REV. 9-10. January 2017. https://efiling.energy.ca.gov/getdocument.aspx?tn=217317
- 49. Explanatory Note
- 50.(a) European Commission, Report from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on the status of production expansion of relevant food and feed crops worldwide. Brussels. March 13, 2019. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52019DC0142
 - (b) European Commission, Annexes to the Report from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on the status of production expansion of relevant food and feed crops worldwide. Annexes 1 to 2. Brussels. March 13, 2019.
 - (c) Searle, S., Defining Low and High Indirect Land-Use Change Biofuels in European Union Policy. The International Council on Clean Transportation. November 2018. https://theicct.org/sites/default/files/High%20low%20ILUC%20Fact%20Sheet%2020181113.pdf
- 51. United States Government Interagency Working Group on Social Cost of Greenhouse Gases, Technical Support Document: Social Cost of Carbon, Methane, and Nitrous Oxide Interim Estimates under Executive Order 13990. February 2021. https://www.whitehouse.gov/wp-content/uploads/2021/02/TechnicalSupportDocument_SocialCostofCarbonMethaneNitrousOxide.pdf
- 52. California Air Resources Board, 2022 Scoping Plan for Achieving Carbon Neutrality. 27-28. November 16, 2022. https://www2.arb.ca.gov/sites/default/files/2022-12/2022-sp_1.pdf
- 53. Office of Management and Budgets. Circular A-4. September 17, 2023. https://www.transportation.gov/sites/dot.gov/files/docs/OMB%20Circular%20No.%20A-4.pdf
- 54. National Academies of Sciences, Engineering, and Medicine, Valuing Climate Damages: Updating Estimation of Carbon Dioxide. National Academies Press, Washington DC. 2017. https://nap.nationalacademies.org/catalog/24651/valuing-climate-damages-updating-estimation-of-the-social-cost-of https://nap.nationalacademies.org/catalog/24651/valuing-climate-damages-updating-estimation-of-the-social-cost-of

- 55. United States Government Interagency Working Group on Social Cost of Greenhouse Gases, Technical Support Document: Social Cost of Carbon, Methane, and Nitrous Oxide Interim Estimates under Executive Order 13990. February 2021. https://www.whitehouse.gov/wp-content/uploads/2021/02/TechnicalSupportDocument_SocialCostofCarbonMethaneNitrousOxide.pdf
- 56. United States Environmental Protection Agency, Social Cost of Carbon Fact Sheet. December 2016. https://www.epa.gov/sites/default/files/2016-12/documents/social_cost_of_carbon_fact_sheet.pdf
- 57. California Air Resources Board, *Compliance Offset Protocol Livestock Projects*.
 November 14, 2014.

 https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2014/capandtrade14/ctlivestockprotocol.pdf
- 58. United States Energy Information Administration, *Energy Conversion Calculators*. (Updated June 16, 2023). https://www.eia.gov/energyexplained/units-and-calculators/energy-conversion-calculators.php
- 59. California Air Resources Board, California Air Resources Board Updated Health Endpoints Bulletin. 2022. https://ww2.arb.ca.gov/sites/default/files/2022-11/California%20Air%20Resources%20Board%20Updated%20Health%20Endpoints%20Bulletin%20-%20Edited%20Nov%202022_0.pdf
- 60. United States Environmental Protection Agency, *Integrated Science Assessment for Particulate Matter*. December 2019. https://cfpub.epa.gov/ncea/isa/recordisplay.cfm?deid=347534
- 61. United States Environmental Protection Agency, *Estimating PM2.5- and Ozone- Attributable Health Benefits*. March 2021. https://www.epa.gov/sites/default/files/2021-03/documents/estimating pm2.5- and ozone-attributable health benefits tsd.pdf
- 62. United States Environmental Protection Agency, *Integrated Science Assessment for Oxides of Nitrogen Health Criteria*. January 2016. https://cfpub.epa.gov/ncea/isa/recordisplay.cfm?deid=310879
- 63. Fann N., Fulcher C.M., & Hubbell B.J., *The influence of location, source, and emission type in estimates of the human health benefits of reducing a ton of air pollution.* Air Quality, Atmosphere & Health, 2:169-176. June 9, 2009. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2770129/
- 64. Fann, N., Baker, K. R., Chan, E. A., Eyth, A., Macpherson, A., Miller, E., & Snyder, J. Assessing human health PM2. 5 and ozone impacts from US oil and natural gas sector emissions in 2025. Environmental Science & Technology, 52(15), 8095-8103. July 13, 2018. https://pubs.acs.org/doi/full/10.1021/acs.est.8b02050 https://pubs.acs.org/doi/full/10.1021/acs.est.8b02050
- 65. United States Environmental Protection Agency, *Technical Support Document (TSD)* for the Final Revised Cross-State Air Pollution Rule Update for the 2008 Ozone Season NAAQS Estimating PM2.5- and Ozone-Attributable Health Benefits. March 2021. https://www.epa.gov/sites/default/files/2021-03/documents/estimating_pm2.5-and_ozone-attributable_health_benefits_tsd.pdf
- 66. Sears, M. R., Greene, J. M., Willan, A. R., Wiecek, E. M., Taylor, D. R., Flannery, E. M., Cowan, J.O., Herbison, G.P., Silva, P.A, & Poulton, R., *A longitudinal, population-based, cohort study of childhood asthma followed to adulthood.* New England Journal of Medicine, 349(15), 1414-1422. October 9, 2003. https://www.nejm.org/doi/full/10.1056/nejmoa022363

- 67. McGeachie M.J., Yates K.P., Zhou X., Guo F., Sternberg A.L., Van Natta M.L., Wise R.A., Szefler S.J., Sharma S., Kho A.T., Cho M.H., Croteau-Chonka D.C., Castaldi P.J., Jain G., Sanyal A., Zhan Y., Lajoie B.R., Dekker J., Stamatoyannopoulos J., Covar R.A., Zeiger R.S., Adkinson N.F., Williams P.V., Kelly H.W., Grasemann H., Vonk J.M., Koppelman G.H., Postma D.S., Raby B.A., Houston I., Lu Q., Fuhlbrigge A.L., Tantisira K.G., Silverman E.K., Tonascia J., Weiss S.T., & Strunk, R.C., *Patterns of growth and decline in lung function in persistent childhood asthma*. New England Journal of Medicine, 374(19), 1842-1852. May 12, 2016. https://www.nejm.org/doi/full/10.1056/nejmoa1513737
- 68. Explanatory Note
- 69. California Legislature, Senate Bill 1020 Clean Energy, Jobs, and Affordability Act of 2022. Signed September 16, 2022. https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=202120220SB1020
- 70. California Legislature, Senate Bill 100 California Renewables Portfolio Standard Program: emissions of greenhouse gases. Signed September 10, 2018. https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201720180SB100
- 71. California Air Resources Board, *Mandatory Greenhouse Gas Reporting 2021 Emissions Year Frequently Asked Questions*. November 4, 2022. https://ww2.arb.ca.gov/sites/default/files/classic/cc/reporting/ghg-rep/reported-data/2021mrrfags.pdf
- 72. California Air Resources Board, California Greenhouse Gas Emissions for 2000 to 2020 Trends of Emissions and Other Indicators. October 26, 2022. https://ww2.arb.ca.gov/sites/default/files/classic/cc/inventory/2000-2020_ghg_inventory_trends.pdf
- 73. Delegates to the First National People of Color Environmental Leadership Summit, *The Principles of Environmental Justice (EJ)*. 1991. https://www.ejnet.org/ej/principles.html
- 74. California Air Resources Board, *Vision for Environmental Justice and Racial Equity*. October 24, 2022. https://ww2.arb.ca.gov/sites/default/files/2023-04/CARB%20Vision%20Racial%20Equity%20Final%20ENG.pdf
- 75. Environmental Justice Advisory Committee, AB 32 Environmental Justice Advisory Committee Charter. 2023. https://ww2.arb.ca.gov/sites/default/files/barcu/board/books/2023/032323/23-3-4ejaccharter.pdf
- 76. Environmental Justice Advisory Committee, *Draft Recommendations to the California Air Resources Board (CARB) on the Low Carbon Fuel Standard Regulation Updates.*August 28, 2023. https://ww2.arb.ca.gov/sites/default/files/2023-08/EJAC%20DRAFT%20Low%20Carbon%20Fuel%20Standard%20Recommendations%20Version%202%20082823.pdf
- 77. Environmental Justice Advisory Committee, Environmental Justice Advisory Committee 2022 Scoping Plan Recommendations: NF44 & NF54. 15-16. September 30, 2022. https://ww2.arb.ca.gov/sites/default/files/barcu/board/books/2022/090122/finalejacrecs.pdf
- 78. Environmental Justice Advisory Committee, Environmental Justice Advisory Committee 2022 Scoping Plan Recommendations. September 30, 2022. https://www2.arb.ca.gov/sites/default/files/barcu/board/books/2022/090122/finalejacrecs.pdf
- 79. Explanatory Note

- 80. Environmental Justice Advisory Committee, *Draft Recommendations to the California Air Resources Board (CARB) on the Low Carbon Fuel Standard Regulation Updates*. August 28, 2023. https://ww2.arb.ca.gov/sites/default/files/2023-08/EJAC%20DRAFT%20Low%20Carbon%20Fuel%20Standard%20Recommendations%20Version%202%20082823.pdf
- 81. California Department of Finance, *National Economic Forecast Annual & Quarterly* (Updated in April 2023). https://dof.ca.gov/Forecasting/Economics/economic-forecasts-u-s-and-california/
- 82. California Department of Finance, *Economic Research Unit. California Economic Forecast Annual & Quarterly* (Updated in April 2023). https://dof.ca.gov/Forecasting/Economics/economic-forecasts-u-s-and-california/
- 83. California Department of Finance, *Demographic Research Unit, Report P-3: Population Projections, California, 2010-2060* (Baseline 2019 Population Projections; Vintage 2020 Release). 2021.
- 84. California Department of Finance, *Demographic Research Unit. Report P-3: Population Projections*, California, 2020-2060 (Baseline 2019 Population Projections; Vintage 2023 Release). 2023. Zip File.
- 85. Explanatory Note
- 86. Explanatory Note
- 87. Explanatory Note
- 88. Explanatory Note
- 89. Explanatory Note
- 90. Explanatory Note
- 91. Explanatory Note
- 92. Explanatory Note
- 93. United States Energy Information Administration, *Annual Retail Gasoline and Diesel Prices* (Updated on July 31, 2023). https://www.eia.gov/dnav/pet/pet_pri_gnd_dcus_sca_a.htm
- 94. California Air Resources Board, Low Carbon Fuel Standard Public Workshop: Concepts and Tools for Compliance Target Modeling. November 9, 2022. https://www2.arb.ca.gov/sites/default/files/2022-11/LCFSPresentation.pdf
- 95. Environmental Justice Advisory Committee, *Draft Recommendations to the California Air Resources Board (CARB) on the Low Carbon Fuel Standard Regulation Updates.* August 28, 2023. https://ww2.arb.ca.gov/sites/default/files/2023-08/EJAC%20DRAFT%20Low%20Carbon%20Fuel%20Standard%20Recommendations%20Version%202%20082823.pdf
- 96. Explanatory Note
- 97. California Air Resources Board, 2022 Scoping Plan for Achieving Carbon Neutrality. 27-28. November 16, 2022. https://ww2.arb.ca.gov/sites/default/files/2022-12/2022-sp_1.pdf
- 98. California Air Resources Board, Analysis of Progress toward Achieving the 2030 Dairy and Livestock Sector Methane Emissions Target. (Accessed on September 19, 2023). https://ww2.arb.ca.gov/resources/documents/dairy-livestock-sb1383-analysis
- 99. California Air Resources Board, 2022 Scoping Plan for Achieving Carbon Neutrality. 91-97. November 16, 2022. https://ww2.arb.ca.gov/sites/default/files/2022-12/2022-sp_1.pdf
- 100. ICF Resources LLC, Analyzing Future Low Carbon Fuel Targets in California: Initial Results for Accelerated Decarbonization, Central Case. Submitted to Auto-

- Acceleration Mechanism for the Low Carbon Fuel Standard Public Comment Docket. June 30, 2023. https://www2.arb.ca.gov/form/public-comments/submissions/4306
- United States Environmental Protection Agency, Final Volume Standards for 2020, 2021, and 2022. (Updated on August 31, 2022). https://www.epa.gov/renewable-fuel-standard-program/final-volume-standards-2020-2021-and-2022
- 102. United States Environmental Protection Agency, *Proposed Renewable Fuel Standards for 2023, 2024, and 2025.* (Updated on February 2, 2023). https://www.epa.gov/renewable-fuel-standard-program/proposed-renewable-fuel-standards-2023-2024-and-2025
- 103. California Air Resources Board, *LCFS Meetings and Workshops webpage*. (Accessed on November 30, 2023). https://ww2.arb.ca.gov/our-work/programs/low-carbon-fuel-standard/lcfs-meetings-and-workshops
- 104. California Air Resources Board, Low Carbon Fuel Standard website. (Accessed on May 15, 2023). https://ww2.arb.ca.gov/our-work/programs/low-carbon-fuel-standard

Appendix B: CA- GREET 4.0 Supplemental Document

- Wang, M., Elgowainy, A., Uisung, L., Kwang, B., Bafana, A., Benavides, P., Burnham, A., Cai, H., Cappello, V., Chen, P., gan, Y., Gracida-Alvarez, U., Hawkins, T., Iyer, R., Kelly, J., Kim, T., Kumar, S., Kwon, H., Lee, K., Liu, X., Lu, Z., Masum, F., Mg, C., Ou, L., Reddi, K., Siddique, N., Sun, P., Vyawahare, P. Xu, H., & Zaimes, G., GREET1 2022, October Release. Center for Transportation Research, Argonne National Laboratory (accessed November 2, 2022). https://greet.anl.gov/greet_excel_model.model
- 2. United States Environmental Protection Agency, eGRID+Data.xls. (Updated on January 30, 2023). https://www.epa.gov/system/files/documents/2023-01/eGRID2021_data.xlsx
- 3. Brandt, A.R., Masnadi, M.S, Rutherford, J.S., El-Houjeiri, Vafi, K., H.M., Langfitt Q., Duffy, J., Sleep, S., Pacheco, D., Dadashi, Z., Orellana, A., MacLean, H., McNally, S., Englander, J., & Bergerson, J., *Oil Production Greenhouse Gas Emissions Estimator OPGEE v.3.0b.* (Updated on May 14, 2022). https://eao.stanford.edu/research-project/opgee-oil-production-greenhouse-gas-emissions-estimator
- 4. California Air Resources Board, *EMFAC2021. v1.0.2*. (Updated April 2021). https://arb.ca.gov/emfac/
- California Air Resources Board, CA-GREET3.0 Model. (Released August 13, 2018). https://www.arb.ca.gov/fuels/lcfs/ca-greet/ca-greet30corrected.xlsm?_ga=2.110367174.299502000.1698789959-1426221606.1589399602
- California Air Resources Board, Attachment C CA-GREET3.0 Model Technical Support Documentation. August 13, 2018. https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2018/lcfs18/15dayattc2.pdf?_ga= 2.54016097.835610192.1686001270-1419472287.1639891760
- 7. California Air Resources Board, *Technical Support Documentation for Lookup Table Pathways*, *Proposed Amendments for the Low Carbon Fuel Standard Regulation*. (Date of adoption).
- 8. IEA, *Countries & Regions*. (Accessed on October 8, 2023). https://www.iea.org/countries

- 9. Blaze, J., Commentary: Moving grain is a major market for U.S. and Canadian railroads (Accessed on November 16, 2023). https://www.freightwaves.com/news/commentary-moving-grain-is-a-major-market-for-u-s-and-canadian-railroads
- 10. California Air Resources Board, *Unofficial electronic version of the Low Carbon Fuel Standard Regulation*. July 2020. https://ww2.arb.ca.gov/sites/default/files/2020-07/2020 lcfs fro oal-approved unofficial 06302020.pdf

Appendix C-1: Standardized Regulatory Impact Assessment

- CARB (2022), The 2022 Scoping Plan Update for Achieving Carbon Neutrality explains the overarching framework of California's GHG policies. 2022 Scoping Plan Update (ca.gov)
- 2. Zero Emission Vehicle, Advanced Clean Cars II (ACC II), Advanced Clean Fleets (ACF), Advanced Clean Trucks (ACT), Commercial Harbor Craft, the Short-Lived Climate Pollutant Reduction Strategy, 2020 Mobile Source Strategy, Sustainable Freight Action Plan, In-Use Locomotive Regulation, and Innovative Clean Transit (ICT).
- 3. CARB (2023), CARB and truck and engine manufacturers announce unprecedented partnership to meet clean air goals. CARB and truck and engine manufacturers announce unprecedented partnership to meet clean air goals | California Air Resources Board
- 4. Explanatory Notes
- 5. Figure 2, Alternative Fuel Volumes and Credit Generation (updated April 28, 2023). LCFS Data Dashboard: https://www.arb.ca.gov/fuels/lcfs/dashboard/dashboard.htm. Accessed August 7, 2023.
- Figure 1, 2011-2021 Performance of the Low Carbon Fuel Standard (updated April 28, 2023). LCFS Data Dashboard: https://www.arb.ca.gov/fuels/lcfs/dashboard/dashboard.htm. Accessed August 7, 2023.
- 7. CARB. (2022). California Greenhouse Gas Emissions for 2000 to 2020 Trends of Emissions and Other Indicators. *California Greenhouse Gas Emissions for 2000 to 2020 Trends of Emissions and Other Indicators*
- 8. CARB (2023), CARB and truck and engine manufacturers announce unprecedented partnership to meet clean air goals. CARB and truck and engine manufacturers announce unprecedented partnership to meet clean air goals | California Air Resources Board
- 9. Explanatory Note
- 10. Cal. Code Regs., tit. 17, § 95487(a)(2)(D).
- 11. Cal. Code Regs., tit. 17, § 95485(c).
- 12. See Cal. Code Regs., tit. 13, § 2001, et seq.
- 13. Explanatory Note
- 14. Senate Bill 1020 (Laird, Chapter 361, Statutes of 2022). California Legislature. Clean Energy, Jobs, and Affordability Act of 2022. Signed Sept. 16, 2022. *Bill Text SB-1020 Clean Energy, Jobs, and Affordability Act of 2022. (ca.gov)*
- 15. Senate Bill 100 (De León, Chapter 312, Statutes of 2018).

 California Legislature. California Renewables Portfolio Standard Program: emissions of greenhouse gases. Signed Sept. 10, 2018. *Bill Text SB-100 California Renewables Portfolio Standard Program: emissions of greenhouse gases*
- 16. CARB. (2023). California Transportation Supply (CATS) model Technical Documentation v0.2. *CATS Technical v0.2.pdf*

- 17. CARB 2022, The 2022 Scoping Plan Update for Achieving Carbon Neutrality explains the overarching framework of California's GHG policies. 2022 Scoping Plan Update (ca.gov)
- 18. CARB. (2023). EMFAC2017 (v1.0.3) Emissions Inventory: Results. https://arb.ca.gov/emfac/emissions-inventory/3f0f3c7489b82ed889c6b740111452af6f718923
- 19. Explanatory Note
- 20. Explanatory Note
- 21. CARB (2023). Methodology for Calculating Base Credits for Non-metered Plug-in Electric Vehicle (PEV) Charging. https://ww2.arb.ca.gov/sites/default/files/2023-02/Non-meteredBaseCreditsMethodology 2023update.pdf
- 22. See CARB. (2023). EMFAC2017 (v1.0.3) Emissions Inventory: Results.
- 23. Explanatory Note
- 24. Explanatory Note
- 25. Explanatory Note
- 26. Mandatory Greenhouse Gas Reporting 2021 Emissions Year Frequently Asked Questions (ca.gov)
- 27. California Greenhouse Gas Emissions for 2000 to 2020 Trends of Emissions and Other Indicators
- 28. Explanatory Note
- 29. Explanatory Note
- 30. Explanatory Note
- 31. Explanatory Note
- 32. Explanatory Note
- 33. Explanatory Note
- 34. CARB. (2022). 2022 Scoping Plan for Achieving Carbon Neutrality. https://ww2.arb.ca.gov/sites/default/files/2022-12/2022-sp.pdf
- 35. Office of Management and Budgets. (2003). Circular A-4. https://www.transportation.gov/sites/dot.gov/files/docs/OMB%20Circular%20No.%20A-4.pdf
- 36. National Academies of Sciences, Engineering, Medicine. (2017). Valuing Climate Damages: Updating Estimation of Carbon Dioxide. 5-6. http://www.nap.edu/24651
- 37.U.S. Government Interagency Working Group on Social Cost of Greenhouse Gases (2021). Technical Support Document: Social Cost of Carbon, Methane, and Nitrous Oxide Interim Estimates under Executive Order 13990. https://www.whitehouse.gov/wp-content/uploads/2021/02/TechnicalSupportDocument_SocialCostofCarbonMethaneNitrousOxide.pdf
- 38.U.S. Environmental Protection Agency. (2016). Social Cost of Carbon Fact Sheet. https://www.epa.gov/sites/default/files/2016-12/documents/social_cost_of_carbon_fact_sheet.pdf
- 39. CARB (2014). Compliance Offset Protocol Livestock Projects.

 https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2014/capandtrade14/ctlivestockprotocol.pdf
- 40.U.S. Energy Information Administration (2023). *Energy Conversion Calculators* (updated June 1, 2023). *https://www.eia.gov/energyexplained/units-and-calculators/energy-conversion-calculators.php. Accessed on 8/4/2023*.
- 41. CARB (2022). California Air Resources Board Updated Health Endpoints Bulletin. https://ww2.arb.ca.gov/sites/default/files/2022-

- 11/California%20Air%20Resources%20Board%20Updated%20Health%20Endpoints%20Bulletin%20-%20Edited%20Nov%202022_0.pdf
- 42. U.S. EPA. (2019). *Integrated Science Assessment for Particulate Matter* (Issue EPA/600/R-19/188). Center for Public Health and Environmental Assessment, Office of Research and Development. https://cfpub.epa.gov/ncea/isa/recordisplay.cfm?deid=347534
- 43. U.S. EPA. (2021). Estimating PM2.5- and Ozone-Attributable Health Benefits. (Technical Support Document (TSD) for the Final Revised Cross-State Air Pollution Rule Update for the 2008 Ozone Season NAAQS). Office of Air and Radiation. https://www.epa.gov/sites/default/files/2021-03/documents/estimating_pm2.5-and ozone-attributable health benefits tsd march 2021.pdf
- 44.U.S. EPA. (2016). Integrated Science Assessment for Oxides of Nitrogen Health Criteria (EPA/600/R-15/068). https://www.epa.gov/isa/integrated-science-assessment-isa-oxides-nitrogen-health-criteria
- 45. Apte, J. S., Chambliss, S. E., Tessum, C. W., & Marshall, J. D. (2019). A Method to Prioritize Sources for Reducing High PM2.5 Exposures in Environmental Justice Communities in California. CARB Contract Number 17RD006. https://ww2.arb.ca.gov/sites/default/files/classic/research/apr/past/17rd006.pdf
- 46. CARB. (2023). CARB's Methodology for Estimating the Health Effects of Air Pollution (Accessed August 4, 2023). https://ww2.arb.ca.gov/resources/documents/carbs-methodology-estimating-health-effects-air-pollution
- 47. Fann N., Fulcher C.M., & Hubbell B.J. (2009). The influence of location, source, and emission type in estimates of the human health benefits of reducing a ton of air pollution. Air Quality, Atmosphere & Health, 2:169-176. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2770129/
- 48. Ibid.
- 49. Fann, N., Baker, K. R., Chan, E. A., Eyth, A., Macpherson, A., Miller, E., & Snyder, J. (2018). Assessing human health PM2. 5 and ozone impacts from US oil and natural gas sector emissions in 2025. Environmental Science & Technology, 52(15), 8095-8103. https://pubs.acs.org/doi/full/10.1021/acs.est.8b02050
- 50.CARB (2022). California Air Resources Board Updated Health Endpoints Bulletin. https://ww2.arb.ca.gov/sites/default/files/2022-11/California%20Air%20Resources%20Board%20Updated%20Health%20Endpoints%20Bulletin%20-%20Edited%20Nov%202022 0.pdf
- 51.U.S. EPA. (2021). Estimating PM2.5- and Ozone-Attributable Health Benefits. (Technical Support Document (TSD) for the Final Revised Cross-State Air Pollution Rule Update for the 2008 Ozone Season NAAQS). Office of Air and Radiation. https://www.epa.gov/sites/default/files/2021-03/documents/estimating_pm2.5-and_ozone-attributable_health_benefits_tsd_march_2021.pdf
- 52.U.S. EPA. (2023). Environmental Benefits Mapping and Analysis Program Community Edition: User's Manual. https://www.epa.gov/sites/default/files/2015-04/documents/benmap-ce_user_manual_march_2015.pdf
- 53.U.S. EPA. (2021). Estimating PM2.5- and Ozone-Attributable Health Benefits. (Technical Support Document (TSD) for the Final Revised Cross-State Air Pollution Rule Update for the 2008 Ozone Season NAAQS). Office of Air and Radiation. https://www.epa.gov/sites/default/files/2021-03/documents/estimating_pm2.5-and_ozone-attributable_health_benefits_tsd_march_2021.pdf
- 54. Explanatory Note

- 55. Sears, M. R., Greene, J. M., Willan, A. R., Wiecek, E. M., Taylor, D. R., Flannery, E. M., Cowan, J.O., Herbison, G.P., Silva, P.A, & Poulton, R. (2003). *A longitudinal, population-based, cohort study of childhood asthma followed to adulthood.* New England Journal of Medicine, 349(15), 1414-1422. https://www.nejm.org/doi/full/10.1056/nejmoa022363
- 56. McGeachie M.J., Yates K.P., Zhou X., Guo F., Sternberg A.L., Van Natta M.L., Wise R.A., Szefler S.J., Sharma S., Kho A.T., Cho M.H., Croteau-Chonka D.C., Castaldi P.J., Jain G., Sanyal A., Zhan Y., Lajoie B.R., Dekker J., Stamatoyannopoulos J., Covar R.A., Zeiger R.S., Adkinson N.F., Williams P.V., Kelly H.W., Grasemann H., Vonk J.M., Koppelman G.H., Postma D.S., Raby B.A., Houston I., Lu Q., Fuhlbrigge A.L., Tantisira K.G., Silverman E.K., Tonascia J., Weiss S.T., & Strunk R.C. (2016). *Patterns of growth and decline in lung function in persistent childhood asthma*. New England Journal of Medicine, 374(19), 1842-1852. *https://www.nejm.org/doi/full/10.1056/nejmoa1513737*
- 57. CARB. (2022). CARB's Methodology for Estimating the Health Effects of Air Pollution. https://ww2.arb.ca.gov/resources/documents/carbs-methodology-estimating-health-effects-air-pollution. Accessed August 4, 2023.
- 58.U.S. EPA. (2022). Environmental Benefit Mapping and Analysis Program Community Edition (BenMAP-CE) version 1.5.8.5 (updated October 4, 2022). https://www.epa.gov/benmap
- 59.U.S. EPA. (2023). Environmental Benefits Mapping and Analysis Program Community Edition: User's Manual. https://www.epa.gov/sites/default/files/2015-04/documents/benmap-ce_user_manual_march_2015.pdf
- 60. CARB. (2023). Valuation Estimates Spreadsheet Workbook.
- 61. As documented in the U.S. EPA. (2021). *Estimating PM2.5- and Ozone-Attributable Health Benefits*. (Technical Support Document (TSD) for the Final Revised Cross-State Air Pollution Rule Update for the 2008 Ozone Season NAAQS). Office of Air and Radiation. https://www.epa.gov/sites/default/files/2021-03/documents/estimating_pm2.5-_and_ozone-attributable_health_benefits_tsd_march_2021.pdf
- 62. Explanatory Note
- 63.U.S. EPA. (2000). An SAB Report on EPA's White Paper Valuing the Benefits of Fatal Cancer Risk Reduction (EPA-SAB-EEAC-00-013). https://nepis.epa.gov/Exe/ZyPDF.cgi/P100JOK2.PDF?Dockey=P100JOK2.PDF.
- 64. Ibid.
- 65.U.S. EPA (2023). *Mortality Risk Valuation: What value of statistical life does EPA use?* (updated March 13, 2023). https://www.epa.gov/environmental-economics/mortality-risk-valuation. Accessed January 2023.
- 66. Explanatory Note
- 67. CARB (2023). LCFS Credit Clearance Market (updated 2023). https://ww2.arb.ca.gov/resources/documents/lcfs-credit-clearance-market. Accessed April 17, 2023.
- 68. California Energy Commission. (2023). 2022 Transportation Fuel Price Forecasts Workbook (updated January 5, 2023). Transportation Energy Forecasting Unit.
- 69. California Energy Commission (2023). *California's Oil Refineries* (updated February 7, 2023). https://www.energy.ca.gov/data-reports/energy-almanac/californias-petroleum-market/californias-oil-refineries. Accessed March 21, 2023.
- 70. Explanatory Note
- 71. Explanatory Note

- 72. United States Energy Information Administration. *Annual Retail Gasoline and Diesel Prices* (updated July 31, 2023). https://www.eia.gov/dnav/pet/pet_pri_gnd_dcus_sca_a.htm. Accessed August 7, 2023.
- 73. Office of Environmental Health Hazard Assessment. (2022). Benefits and Impacts of Greenhouse Gas Limits on Disadvantaged Communities- Findings from the Second Examination (updated February 3, 2022). https://oehha.ca.gov/environmental-justice/report/ab32-benefits. Accessed August 8, 2023.
- 74. California Clean Fuel Reward. (2023). *Reporting: Customer Overview* (updated June 29, 2023). https://cleanfuelreward.com/reporting. Accessed August 7, 2023.
- 75. CARB. *Clean Transportation Equity Incentives webpage*. https://ww2.arb.ca.gov/clean-transportation-equity-incentives. Accessed August 9, 2023.
- 76. California Department of Tax and Fee Administration. (2023). California City and County Sales and Use Tax Rates (updated January 1, 2023). https://www.cdtfa.ca.gov/taxes-and-fees/Archive-Rates-01-01-23-03-31-23.pdf.
- 77. CARB. (2022). *Greenhouse Gas Emission Inventory* [Fuel combustion activity data]. https://ww2.arb.ca.gov/applications/greenhouse-gas-emission-inventory-0
- 78. Explanatory Note
- 79. Explanatory Note
- 80.CARB. (2022). *Greenhouse Gas Emission Inventory* [Fuel combustion activity data]. https://ww2.arb.ca.gov/applications/greenhouse-gas-emission-inventory-0
- 81. Explanatory Note
- 82. Title 1, California Code of Regulations, sections 2000-2004. California Department of Finance. (2013). Chapter 1: Standardized Regulatory Impact Analysis for Major Regulations Order of Adoption. https://dof.ca.gov/wp-content/uploads/sites/352/Forecasting/Economics/Documents/Order of Adoption-1.pdf
- 83. California Department of Finance (2023). *National Economic Forecast Annual & Quarterly* (updated April 2023). https://dof.ca.gov/Forecasting/Economics/economic-forecasts-u-s-and-california/. Accessed August 7, 2023.
- 84. California Department of Finance (2023). Economic Research Unit. *California Economic Forecast Annual & Quarterly* (updated April 2023). https://dof.ca.gov/Forecasting/Economics/economic-forecasts-u-s-and-california/. Accessed August 7, 2023.
- 85. California Department of Finance (2023). *National Deflators: Calendar Year averages* (updated April 2023). *https://dof.ca.gov/forecasting/economics/economic-indicators/inflation/*. Accessed August 7, 2023.
- 86. California Department of Finance (2022). Report P-3: Population Projections, California, 2010-2060 (Baseline 2019 Population Projections; Vintage 2023 Release). Updated July 19, 2023. Demographic Research Unit. https://dof.ca.gov/forecasting/demographics/projections/. Accessed July 2023.
- 87. Explanatory Note
- 88. CARB (2023). Proposed Zero-Emission Forklift Regulation SRIA. https://dof.ca.gov/wp-content/uploads/sites/352/2023/04/ZE-Forklift-SRIA-to-DOF.pdf
- 89. Explanatory Note
- 90.CARB (2022). Low Carbon Fuel Standard Public Workshop: Concepts and Tools for Compliance Target Modeling. https://ww2.arb.ca.gov/sites/default/files/2022-11/LCFSPresentation.pdf

- 91. CARB (2022). California Transportation Supply (CATS) Model Technical Documentation. https://ww2.arb.ca.gov/sites/default/files/2022-11/CATS%20Technical.pdf.
- 92. CARB (2023). CARB Pollution Mapping Tool. https://www.arb.ca.gov/carbapps/pollution-map/. Accessed February 7, 2023.
- 93. CARB. (2023). Facility Search Engine Kern Oil & Refining, 2021 Criteria & Toxic plus Risk Data. https://www.arb.ca.gov/app/emsinv/facinfo/facinfo.php?dd=. Accessed July 2023.
- 94. San Joaquin Valley Air Pollution Control District. (2020). *Rule 4311*. https://www.valleyair.org/rules/currntrules/r4311.pdf.
- 95. CA-GREET3.0 model, 2018.
- 96. Derived from emissions in *CARB Pollution Mapping Tool*. https://www.arb.ca.gov/carbapps/pollution-map/, Energy Independence Now, *Renewable Hydrogen Roadmap*. https://einow.org/rh2roadmap, and U.S. Energy Information Administration, 2016. *Refinery Utilization and Capacity*. https://www.eia.gov/dnav/pet/pet_pnp_unc_a_(na)_YUP_pct_m.htm.
- 97. Bloom Energy (2002). *The Bloom Energy Server 5 Data Sheet.* https://www.bloomenergy.com/wp-content/uploads/es5-300kw-datasheet-2022.pdf.
- 98. CARB (2023). *LCFS Quarterly Data Spreadsheet* (Updated July 31, 2023). https://ww2.arb.ca.gov/resources/documents/low-carbon-fuel-standard-reporting-tool-quarterly-summaries.
- 99. (a) CARB (2023). EMFAC 2021 adjusted for adopted regulations including advanced clean fleets (ACF). Accessed July 19, 2023.
 - (b) CARB (2022). Advanced Clean Fleets Regulation Appendix F: Emissions Inventory and Results. https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/acf22/appf.pdf.
- 100. U.S. EPA (2009). *Emission Factors for Locomotives*. Office of Transportation and Air Quality.
 - https://nepis.epa.gov/Exe/ZyPDF.cgi/P100500B.PDF?Dockey=P100500B.PDF
- 101. CARB (2022). CARB's 2022 In Use Locomotive Emission Inventory: Regulation Proposal and Scenarios. Air Quality Planning and Science Division, Mobile Source Analysis Branch.
 - https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/locomotive22/appg.pdf.
- 102. U.S. DOT (2023). Class I Rail Freight Fuel Consumption and Travel Workbook.
- 103. AltAir Fuels. (2015). Paramount, CA GreenJet Refinery.

 https://www.smgov.net/uploadedFiles/Departments/Airport/Sustainability/20150126_Alt
 Air Presentation.pdf
- 104. IFEU (2004). Energy savings by light-weighting II. https://transport.world-aluminium.org/fileadmin/_migrated/content_uploads/1274789761IFEU2003_Energy_savings_by_light-weighting_-_I.pdf
- 105. Anderson, B. E., Beyersdorf, A. J., Hudgins, C. H., Plant, J. V., Thornhill, K. L., Winstead, E. L., Ziemba, L. D., Howard, R., Corporan, E., Miake-Lye, R.C., Herndon, S.C., Timko, M., Woods, E., Doods, W., Lee, B., Santoni, G., Whitefield, P., Hagen, D., Lobo, P... Bhargava, A. (2011). Alternative Aviation Fuel Experiment (AAFEX) (No. NASA/TM-2011-217059).
 - https://ntrs.nasa.gov/api/citations/20110007202/downloads/20110007202.pdf
- 106. Lobo, Prem, Hagen, D.E., & Whitefield, P.D. (2011). Comparison of PM Emissions from a Commercial Jet Engine Burning Conventional, Biomass, and Fischer-

- *Tropsch Fuels*. Environmental Science & Technology, 45 (24),10744–10749. https://pubmed.ncbi.nlm.nih.gov/22043875/
- 107. Carter, Nicholas A., Stratton, R.W., Bredehoeft, M.K., & Hileman, J.I. (2011). Energy and Environmental Viability of Select Alternative Jet Fuel Pathways. Massachusetts Institute of Technology. http://web.mit.edu/aeroastro/partner/reports/proj28/altfuelpathways.pdf
- 108. CARB (2017). 2016 Vision 2.1 (updated February 15, 2017). https://www.arb.ca.gov/planning/vision/downloads.html. Accessed November 30, 2017.
- 109. Boeing Company, UOP, & United States Air Force Research Laboratory (2011). Research Report D02-1739: Evaluation of Bio-Derived Synthetic Paraffinic Kerosenes (Bio-SPKs). UOP, U.S. Air Force Research Laboratory. Committee D02 on Petroleum Products and Lubricants, Subcommittee D02.J0.06 on Emerging Turbine Fuels, ASTM International.
- 110. Timko, M.T., Herndon, S.C., Blanco, d.E., Wood, E.C., Yu, Z., Miake-Lye, R.C., Knighton, W.B., Shafer, L., DeWitt, M.J., Corporan, E. (2011). Combustion Products of Petroleum Jet Fuel, a Fischer-Tropsch Synthetic Fuel, and a Biomass Fatty Acid Methyl Ester Fuel for a Gas Turbine Engine Combustion Science and Technology,183:10, 1039-1068.
 - https://www.tandfonline.com/doi/abs/10.1080/00102202.2011.581717?journalCode=gcs t20
- 111. Corporan, E., Edwards, T., Shafer, L., DeWitt, M.J., Klingshirn, C.D., Zabarnick, S., West, Z., Striebich, R., Graham, J., Klein, J. (2011). Chemical, Thermal Stability, Seal Swell, and Emissions Studies of Alternative Jet Fuels. Energy & Fuels, 25, 955-966. https://pubs.acs.org/doi/pdf/10.1021/ef101520v
- 112. Edwards, T., Meyer, D., Johnston, G., McCall, M., Rumizen, M., Wright, M. (2016). Research Report D02-1828: Evaluation of Alcohol to Jet Synthetic Paraffinic Kerosenes (ATJ-SPKs). Committee D02 on Petroleum Products, Liquid Fuels, and Lubricants, Subcommittee D02.J0 on Aviation Fuels, ASTM International.
- 113. Explanatory Note
- 114. CARB. (2015). Proposed Regulation on the Commercialization of Alternative Diesel Fuels Staff Report: Initial Statement of Reasons. Industrial Strategies Division, Oil and Gas and GHG Mitigation Branch & Transportation Fuels Branch. https://www.arb.ca.gov/regact/2015/adf2015/adf15isor.pdf
- 115. Durbin, T.D., Miller, J.W., Johnson, K., Hajbabaei, M., Kado, N.Y., Kobayashi, R., Lui, X., Vogel, C.F., Matsumura, F. Wong, P.S., & Cahill, T. (2011). Final Report CARB Assessment of the Emissions from the Use of Biodiesel as a Motor Vehicle Fuel in California "Biodiesel Characterization and NOx Mitigation Study". https://ww2.arb.ca.gov/sites/default/files/classic/isd/fuels/diesel/altdiesel/20111013_carb %20final%20biodiesel%20report.pdf?_ga=2.58437354.1525227723.1691423115-350507302.1675712467
- 116. Explanatory Note
- 117. CARB. (2015). Proposed Regulation on the Commercialization of Alternative Diesel Fuels Staff Report: Initial Statement of Reasons. Industrial Strategies Division, Oil and Gas and GHG Mitigation Branch & Transportation Fuels Branch. https://www.arb.ca.gov/regact/2015/adf2015/adf15isor.pdf
- 118. CARB. (2015). Proposed Regulation on the Commercialization of Alternative Diesel Fuels Staff Report: Initial Statement of Reasons. 41-45. https://www.arb.ca.gov/regact/2015/adf2015/adf15isor.pdf.

- 119. Explanatory Note
- 120. Explanatory Note
- 121. CARB. (2015). Proposed Regulation on the Commercialization of Alternative Diesel Fuels Staff Report: Initial Statement of Reasons. 41-45.
- 122. Durbin, T.D., Miller, J.W., Johnson, K., Hajbabaei, M., Kado, N.Y., Kobayashi, R., Lui, X., Vogel, C.F., Matsumura, F. Wong, P.S., & Cahill, T. (2011). Final Report CARB Assessment of the Emissions from the Use of Biodiesel as a Motor Vehicle Fuel in California "Biodiesel Characterization and NOx Mitigation Study". https://ww2.arb.ca.gov/sites/default/files/classic/isd/fuels/diesel/altdiesel/20111013_carb %20final%20biodiesel%20report.pdf?_ga=2.58437354.1525227723.1691423115-350507302.1675712467
- 123. Explanatory Note
- 124. Explanatory Note
- 125. California Air Resources Board, Proposed Zero-Emission Forklift Regulation Standardized Regulatory Impact Assessment. Date of Release: April 5, 2023 https://dof.ca.gov/wp-content/uploads/sites/352/2023/04/ZE-Forklift-SRIA-to-DOF.pdf
- 126. Explanatory Note
- 127. California Energy Commission (CEC), 2021, July 1, Light Duty ZEV Uptake in Government and Rental Segments. https://www.energy.ca.gov/sites/default/files/2021-07/Light-
 - Duty%20ZEV%20Uptake%20in%20Government%20and%20Rental%20Segments_AD A.pptx
- 128. CARB, 2022. 2022 Edition of CARB's GHG Emission Inventory, fuel combustion activity data.
- 129. Explanatory Note
- 130. CEC, Transportation Fuel Price Forecasts, Final Revision 5 January 2023

Appendix C-3: Summary and Response to Department of Finance Comments to Standardized Regulatory Impact Assessment

- United States Environmental Protection Agency, Renewable Fuel Annual Standards. (Updated on June 21, 2023). https://www.epa.gov/renewable-fuel-standard-program/renewable-fuel-annual-standards
- 2. United States Energy Information Administration, *Frequently Asked Questions*. (Accessed on October 10, 2023). https://www.eia.gov/tools/faqs/faq.php?id=27&t=10
- California Air Resources Board, Fuels Multimedia Evaluation of E15. (Accessed on October 10, 2023). https://ww2.arb.ca.gov/resources/documents/fuels-multimediaevaluation-e15
- United States Environmental Protection Agency, E15 Fuel Registration. (Accessed on October 10, 2023). https://www.epa.gov/fuels-registration-reporting-and-compliancehelp/e15-fuel-registration
- 5. United States Department of Agriculture, Assessing Future Market Opportunities and Challenges for E15 and Higher Ethanol Blends. May 2022. https://www.usda.gov/sites/default/files/documents/e15-market-opportunities.pdf
- Iowa Department of Agriculture & Land Stewardship, *Iowa Renewable Fuels Infrastructure Program*. (Accessed on October 10, 2023). https://iowaagriculture.gov/IRFIP

- 7. United States Department of Agriculture, *USDA Rural Development Higher Blends Infrastructure Incentive Program*. June 26, 2023. https://www.rd.usda.gov/media/file/download/usda-rd-nr-hbiip-chart-06262023pdf
- 8. IEA, Evolution of average range of electric vehicles by powertrain, 2010-2021. (Updated on May 19, 2022). https://www.iea.org/data-and-statistics/charts/evolution-of-average-range-of-electric-vehicles-by-powertrain-2010-2021
- Bloomberg New Energy Finance, *Electric Vehicle Outlook 2023*. 2023. https://assets.bbhub.io/professional/sites/24/2431510_BNEFElectricVehicleOutlook202 3 ExecSummary.pdf
- 10. Brown, A., Cappellucci, J., White, E., Heinrich, A., & Cost, E., Electric Vehicle Charging Infrastructure Trends from the Alternative Fueling Station Locator: Fourth Quarter 2022. National Renewable Energy Laboratory. May 2022. https://www.nrel.gov/docs/fy23osti/85801.pdf
- 11. University of California, Davis, *Advanced Plug-in Electric Vehicle Travel and Charging Behavior Final Report*. April 10, 2020. https://csiflabs.cs.ucdavis.edu/~cjnitta/pubs/2020_03.pdf
- 12. Doshi, S. S., & Metcalf, G. E., How Much Are Electric Vehicles Driven? Depends on the EV. MIT Center for Energy and Environmental Policy Research. January 2023. https://ceepr.mit.edu/wp-content/uploads/2023/01/MIT-CEEPR-WP-2023-01.pdf
- 13. California Energy Commission, Light Duty ZEV Uptake in Government and Rental Segments. July 15, 2021. https://www.energy.ca.gov/sites/default/files/2021-07/Light-Duty%20ZEV%20Uptake%20in%20Government%20and%20Rental%20Segments_AD A.pptx
- 14. California Air Resources Board, 2022 Edition of CARB's GHG Emission Inventory, fuel combustion activity data.
- 15. Explanatory Note
- California Department of Finance, Demographic Research Unit. Report P-3: Population Projections, California, 2020-2060 (Baseline 2019 Population Projections; Vintage 2023 Release). 2023. Zip File.

Appendix D: Environmental Impact Analysis

- 1. California Air Resources Board, Low Carbon Fuel Standard Dashboard. (Accessed on September 19, 2023). https://www2.arb.ca.gov/resources/documents/lcfs-data-dashboard
- 2. California Air Resources Board, *LCFS Quarterly Data Summary Spreadsheet*. (Accessed on September 14, 2023). https://ww2.arb.ca.gov/resources/documents/low-carbon-fuel-standard-reporting-tool-quarterly-summaries
- 3. California Air Resources Board, *Unofficial electronic version of the Low Carbon Fuel Standard Regulation*. 2020. https://ww2.arb.ca.gov/sites/default/files/2020-07/2020_lcfs_fro_oal-approved_unofficial_06302020.pdf
- 4. California Air Resources Board, Low Carbon Fuel Standard 2023 Amendments: Standardized Regulatory Impact Assessment (SRIA). September 8, 2023. https://www2.arb.ca.gov/sites/default/files/2023-09/lcfs sria 2023 0.pdf
- 5. (a) ICF Resources LLC, Analyzing Future Low Carbon Fuel Targets in California: Initial Results for Accelerated Decarbonization, Central Case. Submitted to Auto-Acceleration Mechanism for the Low Carbon Fuel Standard Public Comment Docket. June 30, 2023. https://ww2.arb.ca.gov/form/public-comments/submissions/4306
 - (b) Ro, J.W., Murphy, C.W., & Wang, Q, Fuel Portfolio Scenario Modeling (FPSM) of

- 2030 and 2035 Low Carbon Fuel Standard Targets in California. Institute of Transportation Studies, Davis. https://escholarship.org/uc/item/6f2284rg (c) Bushnell, J., Lade, G., Smith, A., Witcover, J. & Xiao, W., Energy Institute at Haas WP 340: Forecasting Credit Supply Demand Balance for the Low-Carbon Fuel Standard Program. August 2023. https://haas.berkeley.edu/wp-content/uploads/WP340.pdf
- 6. U.S. Department of Energy, *SAF Grand Challenge*. (Accessed on November 9, 2023). https://www.energy.gov/eere/bioenergy/sustainable-aviation-fuel-grand-challenge
- 7. Explanatory Note
- 8. Explanatory Note
- 9. California Air Resources Board, *Advanced Clean Fleets Board Resolution 23-13*. April 27, 2023. https://ww2.arb.ca.gov/sites/default/files/barcu/board/res/2023/res23-13.pdf
- 10. (a) European Commission, Report from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on the status of production expansion of relevant food and feed crops worldwide. Brussels. March 13, 2019. https://eur-lex.europa.eu/legalcontent/EN/TXT/?uri=CELEX:52019DC0142
 - (b) European Commission, Annexes to the Report from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on the status of production expansion of relevant food and feed crops worldwide. Annexes 1 to 2. Brussels. March 13, 2019.
 - (c) Searle, S., Defining Low and High Indirect Land-Use Change Biofuels in European Union Policy. The International Council on Clean Transportation. November 2018. https://theicct.org/sites/default/files/High%20low%20ILUC%20Fact%20Sheet%2020181113.pdf
- 11. California Air Resources Board, *LCFS Land Use Change Assessment*. (Accessed on September 19, 2023). https://ww2.arb.ca.gov/resources/documents/lcfs-land-use-change-assessment
- 12. United States Environmental Protection Agency, *Model Comparison Exercise Technical Document*. June 2023. https://nepis.epa.gov/Exe/ZyPURL.cgi?Dockey=P1017P9B.txt
- 13. Gao, Y., Skutsch, M., Drigo, R., Pacheco, P., & Masera, O. Assessing deforestation from biofuels: methodological challenges. 2011. Applied Geography, 31(2), 508-518. https://www.sciencedirect.com/science/article/abs/pii/S0143622810001220
- 14. Explanatory Note
- 15. Explanatory Note
- 16. California Air Resources Board, Low Carbon Fuel Standard 2023 Amendments Standardized Regulatory Impact Assessment (SRIA): Chapter 2. September 8, 2023. https://ww2.arb.ca.gov/sites/default/files/2023-09/lcfs_sria_2023_0.pdf
- 17. Explanatory Note
- 18. Explanatory Note
- 19. California Air Resources Board, Low Emission Diesel (LED) Study: Biodiesel and Renewable Diesel Emissions in Legacy and New Technology Diesel Engines.

 November 2021. https://ww2.arb.ca.gov/sites/default/files/202112/Low Emission Diesel Study Final Report 12-29-21.pdf
- 20. Explanatory Note
- 21. Lapola, D. M., R. Schaldach, J. Alcamo, A. Bondeau, J. Koch, C. Koelking, & Priess, JA., *Indirect Land-Use Changes Can Overcome Carbon Savings from Biofuels in Brazil. PNAS* 107 (8): 3388–3393. February 23, 2010. http://www.pnas.org/content/107/8/3388.full.pdf+html

- 22. Society of Vertebrate Paleontology, Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources. 2010. https://vertpaleo.org/wp-content/uploads/2021/01/SVP_Impact_Mitigation_Guidelines.pdf
- 23. Trautmann, N.M. & Porter, K.S., *Modern Agriculture: Its Effects on the Environment*. Cornell University Cooperative Extension. 2012. (Accessed on January 11, 2018).
- 24. Sacramento Metropolitan Air Quality Management District, Chapter 6, "Greenhouse Gas Emissions." In CEQA Guide. 2021. http://www.airguality.org/LandUseTransportation/Documents/Ch6GHG2-26-2021.pdf
- 25. Placer County Air Pollution Control District, *Chapter 2, "Thresholds of Significance.*" In 2017 Air Quality Handbook. 2017. https://www.placerair.org/DocumentCenter/View/2047/Chapter-2-Thresholds-of-Significance-PDF
- 26. Bay Area Air Quality Management District, Chapter 6, "Project-Level Climate Impacts." In CEQA Air Quality Guidelines. 2022. https://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa-guidelines-2022/ceqa-guidelines-chapter-6-project-climate-impacts final-pdf.pdf?la=en
- 27. South Coast Air Quality Management District, *Draft Guidance Document Interim CEQA Greenhouse Gas Significance Threshold*. October 2008. http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/ghgattachmente.pdf
- 28. Bay Area Air Quality Management District, Appendix B, "CEQA Thresholds for Evaluating the Significance of Climate Impacts from Land Use Projects and Plans." California Environmental Quality Act Air Quality Guidelines. April 2022. https://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa-guidelines-2022/appendix-b-thresholds-for-evaluating-significance-of-climate-impacts_final-pdf.pdf?la=en
- 29. Explanatory Note
- 30.U.S. Department of Agriculture, Farms and Land in Farms 2022 Summary. National Agricultural Statistics Service. February 2023.

 https://downloads.usda.library.cornell.edu/usda-esmis/files/5712m6524/bk129p580/2z10z2698/fnlo0223.pdf#:~:text=In%202022%2C%2050.8%20percent%20of%20all%20farms%20had,at%20893%2C400%2C000%20acres%2C%20decreased%201%2C900%2C000%20acres%20from%202021
- 31. California Regional Water Quality Control Board (Region 5), Waste Discharge Requirements General Order No. R5-2010-0130 Dairies With Anaerobic Digester or Co-Digester Facilities. December 10, 2010.

 https://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/general_orders/r5-2010-0130_wdr_go.pdf
- 32. United States Environmental Protection Agency, *AgSTAR Project Development Handbook*. EPA 430-B-20-001. April 2020. https://www.epa.gov/sites/default/files/2014-12/documents/agstar-handbook.pdf
- 33. Newmark, R. L., S. J. Friedmann, & Carroll, S.A., *Water Challenges for Geologic Carbon Capture and Sequestration*. Environmental Management 45:651–661. February 3, 2010. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2854354/pdf/267_2010_Article 9434.pdf

- 34. Bertzky, M., Kapos, V., & Scharlemann, J.P.W.,, *Indirect Land Use Change from Biofuel Production: Implications for Biodiversity*. August 2011. http://www.cbd.int/agriculture/2011-121/UNEP-WCMC-JNCC%20report-sep11-en.pdf
- 35. Austin, K. G., Jones, J. P. H., & Clark, C. M., *A review of domestic land use change attributable to US biofuel policy*. Renewable and Sustainable Energy Reviews, 159. May 2022. https://doi.org/10.1016/j.rser.2022.112181
- 36. Gohin, A., The Land Use Impacts of the EU Biodiesel Policy: Assessing the Direct, Indirect and Induced Effects. Journal of Agricultural Economics, 71(2), 305-329. June 2020. https://onlinelibrary.wiley.com/doi/abs/10.1111/1477-9552.12365
- 37. Malins, C., Plevin, R., & Edwards, R., How robust are reductions in modeled estimates from GTAP-BIO of the indirect land use change induced by conventional biofuels? Journal of Cleaner Production, 258. June 10, 2020. https://www.sciencedirect.com/science/article/abs/pii/S0959652620307630
- 38.U.S. Geological Survey, *Critical Mineral Commodities in Renewable Energy*. June 4, 2019. https://www.usgs.gov/media/images/critical-mineral-commodities-renewable-energy#Solar%20Panels
- 39. United States Geological Survey, *Mineral Commodity Summaries* 2023. 2023. https://pubs.usgs.gov/periodicals/mcs2023/mcs2023.pdf
- 40. California Air Resources Board, Low Carbon Fuel Standard 2023 Amendments: Standardized Regulatory Impact Assessment (SRIA), California Employment Impacts. 69-71. September 8, 2023. https://ww2.arb.ca.gov/sites/default/files/2023-09/lcfs_sria_2023_0.pdf
- 41. California Air Resources Board, Low Carbon Fuel Standard 2023 Amendments: Standardized Regulatory Impact Assessment (SRIA). September 8, 2023. https://www2.arb.ca.gov/sites/default/files/2023-09/lcfs sria 2023 0.pdf
- 42. California Air Resources Board, 2022 Scoping Plan for Achieving Carbon Neutrality. November 16, 2022. https://ww2.arb.ca.gov/sites/default/files/2022-12/2022-sp.pdf
- 43. California Air Resources Board, Final Environmental Analysis for the 2022 Scoping Plan for Achieving Carbon Neutrality. December 13, 2022. https://ww2.arb.ca.gov/sites/default/files/2022-12/2022-sp-appendix-b-final-environmental-analysis.pdf
- 44. Ibid.
- 45. Environmental Justice Advisory Committee, Assembly Bill 32 Environmental Justice Advisory Committee (EJAC) DRAFT Recommendations to the California Air Resources Board (CARB) on the Low Carbon Fuel Standard Regulation Updates. August 28, 2023. https://ww2.arb.ca.gov/sites/default/files/2023-08/EJAC%20DRAFT%20Low%20Carbon%20Fuel%20Standard%20Recommendations %20Version%202%20082823.pdf
- 46. Explanatory Note
- 47. California Air Resources Board, 2022 Scoping Plan for Achieving Carbon Neutrality. 91-97. November 16, 2022. https://ww2.arb.ca.gov/sites/default/files/2022-12/2022-sp_1.pdf
- 48. California Air Resources Board, 2022 Scoping Plan for Achieving Carbon Neutrality. November 16, 2022. https://ww2.arb.ca.gov/sites/default/files/2023-04/2022-sp.pdf
- 49. California Air Resources Board, Analysis of Progress toward Achieving the 2030 Dairy and Livestock Sector Methane Emissions Target. (Accessed on September 19, 2023). https://ww2.arb.ca.gov/resources/documents/dairy-livestock-sb1383-analysis 50.lbid.

51.ICF Resources LLC, Analyzing Future Low Carbon Fuel Targets in California: Initial Results for Accelerated Decarbonization, Central Case. Submitted to Auto-Acceleration Mechanism for the Low Carbon Fuel Standard Public Comment Docket. June 30, 2023. https://www2.arb.ca.gov/form/public-comments/submissions/4306

Appendix D (Attachment A): Environmental and Regulatory Setting

- 1. United States Department of Agriculture, *U.S. Forest Resource Facts and Historical Trends*. August 2014, https://www.srs.fs.usda.gov/products/marketing/cards/fs-1035.pdf
- 2. United States Department of Agriculture, *Ag and Food Statistics: Charting the Essentials*. (Updated July 19, 2022). https://www.ers.usda.gov/data-products/ag-and-food-statistics-charting-the-essentials/
- 3. California Department of Conservation, Farmland Mapping and Monitoring Program, California Farmland Conversion Report 2015. September 2015. http://www.conservation.ca.gov/dlrp/fmmp/Documents/fmmp/pubs/2010-2012/FCR/FCR%202015 complete.pdf
- 4. California Department of Food and Agriculture, California Agricultural Statistics Review, 2019-2020. 2020. https://www.cdfa.ca.gov/Statistics/PDFs/2020_Ag_Stats_Review.pdf
- California Department of Conservation, The Williamson Act Status Report, 2016–17. 2018. https://www.conservation.ca.gov/dlrp/wa/Documents/stats_reports/2018%20WA%20Status%20Report.pdf
- 6. California Department of Fish and Wildlife, *Timberland Conservation Program*, (Accessed on June 9, 2021). https://wildlife.ca.gov/Conservation/Timber
- 7. California Department of Fish and Wildlife, *Timberland Conservation Program*, (Accessed on June 9, 2021). https://wildlife.ca.gov/Conservation/Timber
- 8. United States Environmental Protection Agency, *NAAQS Table*. (Accessed on August 31, 2022). https://www.epa.gov/criteria-air-pollutants/naaqs-table
- 9. U.S. Environmental Protection Agency, *Ground-Level Ozone Basics*. (Accessed on June 1,2021). https://www.epa.gov/ground-level-ozone-pollution/ground-level-ozone-basics
- 10. United States. Environmental Protection Agency, *Basic Information about Carbon Monoxide (CO) Outdoor Air Pollution.* (Accessed on June 1, 2021). https://www.epa.gov/co-pollution/basic-information-about-carbon-monoxide-co-outdoor-air-pollution
- 11. United States Environmental Protection Agency, *Sulfur Dioxide Basics*. (Accessed on August 31, 2022). https://www.epa.gov/so2-pollution/sulfur-dioxide-basics
- 12. U.S. Environmental Protection Agency, *Health Effects of Ozone Pollution*. (Accessed on June 1, 2021). https://www.epa.gov/ground-level-ozone-pollution/health-effects-ozone-pollution
- 13. United States Environmental Protection Agency, *Basic Information about NO*₂. (Accessed on November 21, 2023). https://www.epa.gov/no2-pollution/basic-information-about-no2
- 14. United States Environmental Protection Agency, *Particulate Matter (PM) Basics*. (Accessed on August 31, 2022). https://www.epa.gov/pm-pollution/particulate-matter-pm-basics

- 15. United States Environmental Protection Agency, Health and Environmental Effects of Particulate Matter (PM). (Accessed on June 1, 2021). https://www.epa.gov/pm-pollution/health-and-environmental-effects-particulate-matter-pm
- 16. United States Environmental Protection Agency, *Basic Information about Lead Air Pollution*. (Accessed on June 1, 2021). https://www.epa.gov/lead-air-pollution/basic-information-about-lead-air-pollution
- 17. United States Environmental Protection Agency, *Ground-Level Ozone Basics*. (Accessed on November 21, 2023). https://www.epa.gov/ground-level-ozone-pollution/ground-level-ozone-basics
- 18. United States Environmental Protection Agency, *Basic Information about NO*₂. Accessed on November 21, 2023). https://www.epa.gov/no2-pollution/basic-information-about-no2
- 19. California Air Resources Board, 2016 SIP Emission Projection Data, 2012 Estimated Annual Average Emissions Statewide. (Accessed on April 17, 2018).
- 20. California Air Resources Board and California Air Pollution Control Officers Association, Risk Management Guidance for Stationary Sources of Air Toxics, July 23, 2015. https://www.arb.ca.gov/toxics/rma/rmgssat.pdf
- 21. The Nature Conservancy, *States of the Union: Ranking America's Biodiversity*. April 2002. https://www.researchgate.net/publication/269111849/download
- 22. California Department of Fish and Wildlife, *California State Wildlife Action Plan 2015 Update*. September 2015.
 - https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=110399&inline
- 23. Ibid
- 24. Ibid
- 25. Ibid
- 26. Ibid
- 27. Ibid
- 28. United States Fish and Wildlife Service, *Habitat Conservation Plans: Section 10 of the Endangered Species Act.* December 2005.
- 29. California Department of Fish and Wildlife, *Summary of Natural Community Conservation Plans*, June 2021.
- 30. Jones, T.L. & Klar, K.A., *California Prehistory: Colonization, Culture, and Complexity*. AltaMira Press. 2007.
- 31. Ibid
- 32. Ibid
- 33. Ibid
- 34. Ibid
- 35. Moratto, M. J., California Archaeology. Academic Press, Inc. 1984.
- 36. Chartkoff, J.L., & Chartkoff, K.K., *The Archaeology of California*. Stanford University Press. 1984.
- 37. Jones, T.L. & Klar, K.A., *California Prehistory: Colonization, Culture, and Complexity*. AltaMira Press. 2007.
- 38. Ibid
- 39. Moratto, M. J., California Archaeology. Academic Press, Inc. 1984.
- 40. Jones, T.L. & Klar, K.A., *California Prehistory: Colonization, Culture, and Complexity*. AltaMira Press. 2007.
- 41. Moratto, M. J., California Archaeology. Academic Press, Inc. 1984.

- 42. Chartkoff, J.L., & Chartkoff, K.K., *The Archaeology of California*. Stanford University Press. 1984.
- 43. Jones, T.L. & Klar, K.A., *California Prehistory: Colonization, Culture, and Complexity*. AltaMira Press. 2007.
- 44. Ibid
- 45. Ibid
- 46. Ibid
- 47. Rolle, W.F., California: A History. Thomas Y. Crowell Company, Inc. 1969.
- 48. Heizer, R. F., *Volume 8: California*. Handbook of North American Indians. Smithsonian Institution, Washington. 1978.
- 49. Ibid
- 50. Beck, W. A. & Haase, Y.D., *Historical Atlas of California*. University of Oklahoma Press. 1974.
- 51. Staniford, E.F., The Pattern of California History. Canfield Press. 1975.
- 52. Hoover, M.B., Rensch, H.E., Rensch, E.G., & Abeloe, W.N., *Historic Spots in California*, 5th Edition. Stanford University Press. 2002.
- 53. Heizer, R. F., *Volume 8: California*. Handbook of North American Indians. Smithsonian Institution, Washington. 1978.
- 54. Hoover, M.B., Rensch, H.E., Rensch, E.G., & Abeloe, W.N., *Historic Spots in California*, 5th Edition. Stanford University Press. 2002.
- 55. California Department of Transportation, A Historical Context and Archaeological Research Design for Mining Properties in California. 1. 2008. https://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/ser/mining-study-a11y.pdf
- 56. California State Parks, Sustainable Preservation: California's Statewide Historic Preservation Plan 2013-2017. 2013. https://ohp.parks.ca.gov/pages/1069/files/sustainablepreservation_californiastateplan_2 013to2017.pdf
- 57. Ibid
- 58. Ibid
- 59. Ibid
- 60. Ibid
- 61. United States Energy Information Administration, *U.S. Energy Facts Explained*. (Updated on May 14, 2021). https://www.eia.gov/energyexplained/us-energy-facts/
- 62. Ibid
- 63. Ibid
- 64. Ibid
- 65. United States Energy Information Administration, *California: State Profile and Energy Estimates.* (Accessed on November 28, 2023). https://www.eia.gov/state/?sid=CA
- 66. California Energy Commission, 2019 Total System Electric Generation. (Accessed on August 13, 2021). https://www.energy.ca.gov/data-reports/energy-almanac/california-electricity-data/2019-total-system-electric-generation
- 67. Ibid.
- 68. California Energy Commission, Combined Heat and Power: Policy Analysis and 2011-2030 Market Assessment. Prepared by ICF International. June 2012. https://efiling.energy.ca.gov/GetDocument.aspx?tn=65855
- 69. United States Geological Survey, *Ground Water Atlas of the United States: California, Nevada, HA 730-B.* 1995. http://pubs.usgs.gov/ha/ha730/ch_b/index.html

- 70. California Department of Water Resources, *California Precipitation*. 2015. https://cw3e.ucsd.edu/wp-content/uploads/2015/02/CA_Precip_final.pdf
- 71. Harden, D. R., California Geology. Prentice Hall, Inc. 1997.
- 72. Ibid
- 73. Ritchie, D. & Gates, A.E., *Encyclopedia of Earthquakes and Volcanoes*. Checkmark Books. 2001.
- 74. California Geological Survey, Earthquake Fault Zones: A Guide for Government Agencies, Property Owners/Developers, and Geoscience Practitioners for Assessing Fault Rupture Hazards in California. 2018.

 https://www.conservation.ca.gov/cgs/documents/publications/special-publications/SP 042-a11y.pdf
- 75. Jefferson, G.T., Paleontologic Resources and Collections Management Policy. State of California Department of Parks and Recreation Colorado Desert District. 2004.
- 76. United States Geological Survey, Divisions of Geologic Time- Major Chronostratigraphic and Geochronologic Units. July 2010. https://pubs.usgs.gov/fs/2010/3059/pdf/FS10-3059.pdf
- 77. Paleontology Portal, *California, US.* (Accessed on November 12, 2011). http://paleoportal.org/index.php?globalnav=time_space§ionnav=state&name=California
- 78. San Diego Natural History Museum, *Ankylosaur*. (Accessed on November 28, 2023). http://www.sdnhm.org/exhibitions/fossil-mysteries/fossil-field-guide-a-z/ankylosaur
- 79. Ahrens, C. D., *Meteorology Today: An Introduction to Weather, Climate and the Environment, Seventh Edition*. Brooks/Cole-Thomson Learning. 2003.
- 80. Intergovernmental Panel on Climate Change, Climate Change 2007: The Physical Science Basis. Working Group I Contribution to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. 2007. https://www.ipcc.ch/site/assets/uploads/2018/05/ar4_wg1_full_report-1.pdf
- 81. Intergovernmental Panel on Climate Change, Climate Change 2013: The Physical Science Basis. Working Group I Contribution to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. 2013. https://www.ipcc.ch/site/assets/uploads/2018/02/WG1AR5 all final.pdf
- 82. California Climate Action Registry, California Climate Action Registry General Reporting Protocol: Reporting Entity-Wide Greenhouse Gas Emissions, Version 3.0. April 2008. https://www.climateactionreserve.org/wp-content/uploads/videos/GRP_V3_April%202008_FINAL.pdf
- 83. California Air Resources Board, California Greenhouse Gas Emissions for 2000 to 2018: Trends of Emissions and Other Indicators, 2020. https://ww3.arb.ca.gov/cc/inventory/pubs/reports/2000_2018/ghg_inventory_trends_00-18.pdf
- 84. Ibid
- 85. California Air Resources Board, *Short-Lived Climate Pollutant Reduction Strategy*. March 2017.
 - https://www.arb.ca.gov/cc/shortlived/meetings/03142017/final_slcp_report.pdf
- 86. Intergovernmental Panel on Climate Change, Climate Change 2013: The Physical Science Basis. Working Group I Contribution to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. 2013. https://www.ipcc.ch/site/assets/uploads/2018/02/WG1AR5_all_final.pdf

- 87. California Energy Commission, Combined Heat and Power: Policy Analysis and 2011-2030 Market Assessment. Prepared by ICF International. June 2012. https://efiling.energy.ca.gov/GetDocument.aspx?tn=65855
- 88. Ibid.
- 89. Ibid
- 90. California Natural Resources Agency, 2009 California Climate Adaptation Strategy. 2009. http://resources.ca.gov/docs/climate/Statewide_Adaptation_Strategy.pdf
- 91. Ibid
- 92. California Department of Water Resources, *California's Groundwater (Bulletin 118)*. 2003. https://water.ca.gov/Programs/Groundwater-Management/Bulletin-118
- 93. Ibid
- 94. United States Environmental Protection Agency, Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters. Office of Water. Washington, DC. January 1993. https://www.epa.gov/sites/default/files/2015-09/documents/czara -frontmatter.pdf
- 95. United States Geological Survey, *Lithium Data Sheet*. Mineral Commodity Summaries. January 2021. https://pubs.usgs.gov/periodicals/mcs2021/mcs2021-lithium.pdf
- 96. United States Geological Survey, *Cobalt Data Sheet*. Mineral Commodity Summaries. January 2021. https://pubs.usgs.gov/periodicals/mcs2021/mcs2021-cobalt.pdf
- 97. Clinkenbeard, J., & Smith, J., *California Non-Fuel Minerals* 2011. 2011. https://www.conservation.ca.gov/cgs/Documents/Minerals/california-non-fuel-mineral-production-2011.pdf
- 98. California Department of Transportation, *Technical Noise Supplement to the Traffic Noise Analysis Protocol.* September 2013. https://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/env/tens-sep2013-a11y.pdf
- 99. California Department of Transportation, California Airport Land Use Planning Handbook. October 2011. https://dot.ca.gov/-/media/dot-media/programs/aeronautics/documents/californiaairportlanduseplanninghandbook-a11y.pdf
- 100. California Department of Transportation, *Technical Noise Supplement to the Traffic Noise Analysis Protocol*. September 2013. https://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/env/tens-sep2013-a11y.pdf
- 101. Egan, D.E., *Architectural Acoustics*. J. Ross Publishing. 2007.
- 102. California Department of Transportation, *Technical Noise Supplement to the Traffic Noise Analysis Protocol*. September 2013. https://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/env/tens-sep2013-a11y.pdf
- 103. United States Department of Transportation Federal Transit Administration, *Transit Noise and Vibration Impact Assessment Manual*. September 2018.

 https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/researchinnovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no0123_0.pdf
- 104. California Department of Transportation, *Transportation and Construction Vibration Guidance Manual*, April 2020. https://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/env/tcvgm-apr2020-a11y.pdf
- 105. United States Department of Transportation Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual. September 2018. https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-

innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123 0.pdf

- 106. Ibid
- 107. Ibid
- 108. Ibid
- 109. Governor's Office of Planning and Research, State of California General Plan Guidelines, 2017. 2017. http://www.opr.ca.gov/docs/OPR COMPLETE 7.31.17.pdf
- 110. United States Census Bureau, Quickfacts: California; United States, 2021. (Accessed on August 31, 2022). https://www.census.gov/quickfacts/CA
- 111. Ibid.
- 112. Bureau of Labor Statistics, *Economy at a Glance: United States*. (Accessed on June 8, 2021). https://www.bls.gov/eag/eag.us.htm
- 113. U.S. Census Bureau, *Quickfacts: California; United States.* 2019. https://www.census.gov/quickfacts/fact/table/CA,US/RHI825216
- 114. Migration News, *Census: Population and Foreign-born*. Volume 8, Number 2. The Regents of the University of California, Davis campus. February 2001. (Accessed on November 28, 2023). https://migration.ucdavis.edu/mn/more.php?id=2302
- 115. University of Southern California, *New California Population Projection Shows Massive Slowdown*. April 24, 2012.

https://www.sciencedaily.com/releases/2012/04/120424142117.htm

- 116. U.S. Census Bureau, *Quickfacts: California; United States. Population estimates, July 1, 2019 (V2019).* (Accessed on June 8, 2021). https://www.census.gov/quickfacts/CA
- 117. Ibid
- United States Bureau of Labor Statistics, Databases, Tables & Calculators by Subject. (Accessed on August 31, 2022). https://data.bls.gov/timeseries/LASST06000000000000
- 119. California State Parks, *Meeting the Park Needs of All Californians: 2015*Statewide Comprehensive Outdoor Recreation Plan. (Access on November 28, 2023).
 https://www.parksforcalifornia.org/scorp/2015
- 120. Kroeber, A.L., *Handbook of the Indians of California*, General Publishing Company. 1925.
- 121. Heizer, R. F., *Volume 8: California*. Handbook of North American Indians. Smithsonian Institution, Washington. 1978.
- 122. Ibid
- 123. Ortiz, A., *Volume 10: Southwest*. Handbook of North American Indians. Smithsonian Institution, Washington. 1983.
- 124. D'Azevedo, W.L., *Volume 11: Great Basin*. Handbook of North American Indians. Smithsonian Institution, Washington. 1986.
- 125. Heizer, R. F., *Volume 8: California*. Handbook of North American Indians. Smithsonian Institution, Washington. 1978.
- 126. Ibid
- 127. Ibid
- 128. United States Census Bureau, *Quickfacts: California; United States, 2020.* (Access on August 10, 2022).

https://www.census.gov/guickfacts/fact/table/CA/RHI325219#RHI325219

- 129. California Native American Heritage Commission, *California Native American Heritage Commission Five-Year Strategic Plan 2018-2022*. January 19, 2018. http://nahc.ca.gov/wp-content/uploads/2018/04/2018-NAHC-Strategic-Plan.pdf
- 130. California Native American Heritage Commission, *Short Overview of California Indian History*. (Accessed on August 10, 2022). http://nahc.ca.gov/resources/california-indian-history/
- 131. Ibid
- 132. Ibid
- 133. Ibid
- 134. Ibid
- 135. Ibid
- 136. Ibid
- 137. Ibid
- 138. United States Bureau of Reclamation, *California Great Basin: About the Central Valley Project.* (Access on April 17, 2018). https://www.usbr.gov/mp/cvp/about-cvp.html. 139. Ibid
- 140. California Department of Water Resources, *State Water Project*. (Accessed on September 17, 2018). https://water.ca.gov/Programs/State-Water-Project
- 141. Governor's Office of Planning and Research, State of California General Plan Guidelines, 2017. 2017. http://www.opr.ca.gov/docs/OPR_COMPLETE_7.31.17.pdf
- 142. Abatzoglou, J.T. & Williams, A.P., *Impact of anthropogenic climate change on wildfire across western U.S. forests*. Proceedings of the National Academy of Sciences 113(42):11770-11775. October 18, 2016.
- 143. Balch, J. K., Bradley, B.A., Abatzoglou, J.T., Nagy, R.C., Fusco, E. J., & Mahood, A.L., *Human-started wildfires expand the fire nice across the United States*. Proceedings of the National Academy of Sciences 114(11):2946-2951. October 14, 2017.
- 144. Westerling, A. L., *Increasing western US forest wildfire activity: sensitivity to changes in the timing of spring*. Philosophical Transactions of the Royal Society B 371(1696), 20150178. June 5, 2016.
- 145. Schoennagel, T., Balch, J.K., Brenkert-Smith, H., Dennison, P.E., Harvey, B.J., Krawchuck, M.A., Mietkiewicz, N., Morgan, P., Moritz, M.A., Rasker, R., Turner, M.G., & Whitlock, C., *Adapt to more wildfire in western North American forests as climate changes.* Proceedings of the National Academy of Sciences 114(18):4582-4590. April 17, 2017. https://www.pnas.org/doi/full/10.1073/pnas.1617464114

Appendix D (Attachment B): Summary of Environmental Impacts and Mitigation Measures

 Society of Vertebrate Paleontology, Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources. 2010. https://vertpaleo.org/wpcontent/uploads/2021/01/SVP Impact Mitigation Guidelines.pdf

Appendix E: The Specified Purpose and Rationale of Each Adoption, Amendments, or Repeal

- (a) European Commission, Report from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on the status of production expansion of relevant food and feed crops worldwide. Brussels. March 13, 2019. https://eur-lex.europa.eu/legalcontent/EN/TXT/?uri=CELEX:52019DC0142
 - (b) European Commission, Annexes to the Report from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on the status of production expansion of relevant food and feed crops worldwide. Annexes 1 to 2. Brussels. March 13, 2019.
 - (c) Searle, S., Defining Low and High Indirect Land-Use Change Biofuels in European Union Policy. The International Council on Clean Transportation. November 2018. https://theicct.org/sites/default/files/High%20low%20ILUC%20Fact%20Sheet%2020181113.pdf
- 2. California Air Resources Board, *Final Regulation Order Advanced Clean Fleets Regulation: High Priority and Federal Fleets Requirements*. Article 3.4. October 1, 2023. https://www2.arb.ca.gov/sites/default/files/barcu/regact/2022/acf22/ac/acffro21.pdf
- 3. California Public Utilities Commission, *Rulemaking 18-12-006 Decision Concerning Low Carbon Fuels Standard Holdback Revenue Utilization*. December 21, 2020. https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M356/K223/356223853.PDF
- UCLA Luskin Center for Innovation, Overcoming Barriers to Electric Vehicle Charging in Multi-unit Dwellings: A Westside Cities Case Study. Prepared for The Sothern California Association of Governments November 2017. https://innovation.luskin.ucla.edu/wpcontent/uploads/2019/03/Overcoming_Barriers_to_EV_Charging_in_MUDs-A_Westside_Cities_Case_Study.pdf
- 5. Los Angeles Department of Water & Power, *EV Charger Rebate Program*. April 2016. https://www.ladbs.org/docs/default-source/publications/misc-publications/ev-charger-rebate-program.pdf?sfvrsn=faf2fe53_8
- 6. California Air Resources Board, *Proposed Regulation Order Zero-Emission Forklift Fleet Requirements Regulation*. November 7, 2023. https://www2.arb.ca.gov/sites/default/files/barcu/regact/2024/zeforklifts/appa1.pdf
- 7. California CORE, *Clean off-road Equipment Voucher Incentive Project*. Transportation Refrigeration Unit. https://californiacore.org/equipment-category/transport-refrigeration-units-tru/
- 8. California Air Resources Board, 2022 Technology Assessment: Non-Truck Transport Refrigeration Units (TRU). October 2022. https://ww2.arb.ca.gov/sites/default/files/2022-10/CARB%202022%20TRU%20Technology%20Assessment%2010-14-22.pdf https://ww2.arb.ca.gov/sites/default/files/2022-10/CARB 2022 TRU Technology Assessment 10-14-22.pdf
- 9. California Air Resources Board, *Proposed Amendments to the Airborne Toxic Control Measure for In-Use Diesel-Fueled Transport Refrigeration Units (TRU) and TRU Generator Sets*, and Facilities Where TRUs Operate. July 27, 2021. https://ww2.arb.ca.gov/sites/default/files/barcu/board/rulemaking/tru2021/appf.pdf

- 10. South Coast Air Quality Management District, Proposed Rule 2306 Indirect Source Rule for New Intermodal Facilities. June 7, 2022. http://www.aqmd.gov/docs/default-source/planning/fbmsm-docs/r2306-wgm-5-06072022.pdf?sfvrsn=6
- 11. California Air Resources Boad, *LCFS Quarterly Data Spreadsheet*. (Updated on July 31, 2023). https://ww2.arb.ca.gov/sites/default/files/2023-08/quarterlysummary_073123_0.xlsx
- 12. California Energy Commission, New ZEV Sales in California, 2018. (Accessed on October 30, 2023). https://www.energy.ca.gov/zevstats
- 13. California Air Resources Board, Public Hearing to Consider Proposed Amendments to the Low Carbon Fuel Standard Regulation and to the Regulation on Commercialization of Alternative Diesel Fuels Staff Report: Initial Statements of Reasons. March 6, 2018. https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2018/lcfs18/isor.pdf?_ga=2.245534656.55013092.1681752194-839657116.1621967502
- 14. California Air Resources Board, *CA-GREET4.0 Technical Documentation*. [Date of adoption]. https://ww2.arb.ca.gov/resources/documents/lcfs-land-use-change-assessment
- 15. Explanatory Note
- 16. Industrial Truck Association, *United States Factory Shipments*. 2022. https://www.indtrk.org/wp-content/uploads/2023/01/Factory-Shipments-Table-2022-Directory.pdf
- 17. United States. Department of Labor Occupational Safety and Health Administration, Powered Industrial Trucks (Forklift) eTool. (Accessed on October 6, 2023). https://www.osha.gov/etools/powered-industrial-trucks/types-fundamentals/types 18. lbid.
- 19. Reed, J. G., Dailey, E. E., Shaffer, B. P., Lane, B. A., Flores, R. J., Fong, A. A., &; Samuelson, G. S. *Roadmap for the deployment and buildout of renewable hydrogen production plants in California*. Prepared for California Energy Commission. June 3, 2020. https://www.energy.ca.gov/publications/2020/roadmap-deployment-and-buildout-renewable-hydrogen-production-plants-california
- 20. United States Joint Office of Energy and Transportation, *Joint Office Supports Charging Standardization to Enhance EV Charging Experience*. September 14, 2023. https://driveelectric.gov/news/NACS-CCS-Interview
- 21. California Energy Commission, *Statement on the North American Charging Standard J3400*. September 2023. https://efiling.energy.ca.gov/GetDocument.aspx?tn=252421&DocumentContentId=8742
- 22. California Department of Transportation and California Energy Commission, *California's Deployment Plan for the National Electric Vehicle Infrastructure Program:* 2023 Update. August 2023. https://dot.ca.gov/-/media/dot-media/programs/esta/documents/nevi/2023-ca-nevi-plan-update-final-a11y.pdf
- 23. United States Department of Transportation Federal Highway Administration, *All Designated Corridors by State.* (Accessed on October 6, 2023). https://www.fhwa.dot.gov/environment/alternative_fuel_corridors/all_corridors/
- 24. California Air Resources Board, 2022 Scoping Plan for Achieving Carbon Neutrality. December 2022. https://www2.arb.ca.gov/sites/default/files/2023-04/2022-sp.pdf
- 25. California Hydrogen Coalition, *Workshop Comment Letter to CARB*. March 21, 2023. https://www.arb.ca.gov/lists/com-attach/171-lcfs-wkshp-feb23-ws-W2oAMwM2BAgLbllz.pdf

- 26. United States Department of Transportation Federal Highway Administration, *All Designated Corridors by State.* (Accessed on October 6, 2023). https://www.fhwa.dot.gov/environment/alternative_fuel_corridors/all_corridors/
- 27. California Energy Commission, CEC Approves \$2.9 Billion Investment for Zero-Emission Transportation Infrastructure. December 14, 2022. https://www.energy.ca.gov/news/2022-12/cec-approves-29-billion-investment-zeroemission-transportation-infrastructure
- 28. United States Department of Energy, Federal Workplace Charging Program Guide. Office of Energy Efficiency & Renewable Energy. November 2020. https://www.energy.gov/sites/default/files/2020/11/f80/federal-workplace-charging-guide.pdf
- 29. California Air Resources Board, Lookup Table Pathways Technical Support Documentation. February 21, 2023. https://ww2.arb.ca.gov/sites/default/files/classic/fuels/lcfs/ca-greet/lut_update_2023_2.pdf
- 30. Wang, M., Elgowainy, A., Lee, U., Baek, K. H., Bafana, A., Benavides, P. T., Burnham, A., Cai, H., Cappello, V., Chen, P., Gan, Y., Gracida-Alvarez, U. R., Hawkins, T. R., Iyer, R. K., Kelly, J. C., Kim, T., Kumar, S., Kwon, H., Lee, K., Liu, X., Lu, Z., Masum, F., Ng, C., Ou, L., Reddi, K., Siddique, N., Sun, P., Vyawahare, P., Xu, H., & Zaimes, G., Greenhouse gases, Regulated Emissions, and Energy use in Technologies Model (2022 Excel). October 10, 2022. https://greet.anl.gov/greet_excel_model.models
- 31. California Air Resources Board, CA-GREET4.0 Technical Documentation. [Date of adoption]. https://ww2.arb.ca.gov/resources/documents/lcfs-land-use-change-assessment
- 32. California Air Resources Board, LCFS Data *Dashboard, Figure 2.* (Accessed on October 11, 2023). https://ww2.arb.ca.gov/sites/default/files/2022-04/Fig2.xlsx
- 33. California Air Resources Board, LCFS Guidance 20-05: Redaction of Confidential Business Information under the Low Carbon Fuel Standard (LCFS). April 2020. https://ww2.arb.ca.gov/sites/default/files/classic/fuels/lcfs/guidance/lcfsguidance_20-05 ADA.pdf
- 34. Intergovernmental Panel on Climate Change, Summary for Policymakers, In: Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty. 2018. https://www.ipcc.ch/site/assets/uploads/sites/2/2022/06/SPM_version_report_LR.pdf
- 35. United States Department of State and the United States Executive Office of the President, The Long-Term Strategy of the United States: Pathways to Net-Zero Greenhouse Gas Emissions by 2050. November 2021. https://www.whitehouse.gov/wp-content/uploads/2021/10/US-Long-Term-Strategy.pdf?itid=lk inline enhanced-template
- 36. Pipeline Safety Trust, *Pipeline Briefing Paper #2: Pipeline Basics & Specifics About Natural Gas Pipelines*. September 2015. https://pstrust.org/wp-content/uploads/2015/09/2015-PST-Briefing-Paper-02-NatGasBasics.pdf
- 37. California Air Resources Board, 2022 Scoping Plan for Achieving Carbon Neutrality. December 2022. https://www2.arb.ca.gov/sites/default/files/2023-04/2022-sp.pdf
- 38. Explanatory Note
- 39.117th Congress, *Inflation Reduction Act of 2022*. Pub.L. No. 117-169. August 16, 2022. https://www.congress.gov/bill/117th-congress/house-bill/5376/text

- 40. Intergovernmental Panel on Climate Change, Summary for Policymakers, In: Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty. 2018. https://www.ipcc.ch/site/assets/uploads/sites/2/2022/06/SPM_version_report_LR.pdf
- 41. Intergovernmental Panel on Climate Change, Summary for Policymakers, In: Climate Change 2022: Mitigation of Climate Change. Contribution of Working Group III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change. 2022. https://www.ipcc.ch/report/ar6/wg3/downloads/report/IPCC_AR6_WGIII_SummaryForPolicymakers.pdf

Appendix F: Estimating Carbon Intensity Values for the Crude Lookup Table

- Brandt, A.R., Masnadi, M.S, Rutherford, J.S., El-Houjeiri, Vafi, K., H.M., Langfitt Q., Duffy, J., Sleep, S., Pacheco, D., Dadashi, Z., Orellana, A., MacLean, H., McNally, S., Englander, J., & Bergerson, J., Oil Production Greenhouse Gas Emissions Estimator OPGEE v.3.0b. (Updated on May 14, 2022). https://eao.stanford.edu/researchproject/opgee-oil-production-greenhouse-gas-emissions-estimator
- 2. California Air Resources Board, *Oil & Natural Gas: Meetings & Workshops*. (Accessed on November 8, 2023). https://ww2.arb.ca.gov/our-work/programs/oil-and-natural-gas-production-processing-and-storage/workshops-meetings
- 3. El-Houjeiri, H.M., Brandt, A.R., & Duffy, J.E., *Open source LCA Tool for Estimating Greenhouse Gas Emissions from Crude Oil Production Using Field Characteristics*. Environmental Science & Technology. May 1, 2013. https://pubs.acs.org/doi/10.1021/es304570m
- 4. El-Houjeiri, H.M., & Brandt, A.R., *Exploring the variation of GHG emissions from conventional oil production using an engineering-based LCA model*. American Center for Life Cycle Assessment (ACLCA) LCA XII Conference. Tacoma, WA. September 27, 2012.
- 5. IHS Inc., Special Report: Comparing GHG intensity of the oil sands and the average US crude oil. May 2014.
- 6. The International Council on Clean Transportation, *Upstream Emissions of Fossil Fuel Feedstocks for Transport Fuels Consumed in the European Union*. 2014. https://theicct.org/publication/upstream-emissions-of-fossil-fuel-feedstocks-consumed-in-the-european-union/
- 7. (S&T)² Consultants Inc., *OPGEE analysis and comparison to GHGenius*. Prepared for Natural Resources Canada. August 19, 2013.
- 8. Vafi, K. & Brandt, A.R., *Uncertainty of Oil Field GHG Emissions Resulting from Information Gaps: A Monte Carlo Approach.* Environmental Science and Technology, 48, 10511-10518. August 10, 2014. https://pubs.acs.org/doi/10.1021/es502107s
- 9. Vafi, K. and Brandt, A.R., *Reproducibility of LCA Models of Crude Oil Production*. Environmental Science and Technology, 48, 21, 12978-12985. October 3, 2014. https://pubs.acs.org/doi/10.1021/es501847p
- 10. California Air Resources Board, MCON Inputs Spreadsheet for Crude Lookup Table (OPGEE 3.0b). (Accessed May 2023). https://ww2.arb.ca.gov/resources/documents/lcfs-crude-oil-life-cycle-assessment

- 11. California Department of Conservation, *Online Production and Injection Query*. (Accessed February 19, 2018).
- 12. Bureau of Safety and Environmental Enforcement website, *BSEE Federal OCS Data* 2010 and 2012. (Accessed May 9, 2013).
- 13. California Energy Commission, 2010 MCON Import Results 01-28-12 GDS (spreadsheet).
- 14. California Air Resources Board, MCON Inputs Spreadsheet for 2010 Baseline Crudes (OPGEE 3.0b). (Accessed May 2023).
 - https://ww2.arb.ca.gov/resources/documents/lcfs-crude-oil-life-cycle-assessment